

PowerHub Release Notes

Software Version 7-2.6.4.2

MANU0160-04 Rev. A-4/2/98

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TABLE OF CONTENTS

1.0	GEN	ERAL DESCRIPTION OF SOFTWARE RELEASE	. 1	
2.0	SYS	TEM REQUIREMENTS	. 1	
	2.1	Memory Requirements	. 1	
		2.1.1 DRAM	. 1	
		2.1.2 ATM Memory Requirements	. 2	
	2.2	Firmware Requirements	. 2	
	2.3	Compatibility with System Software 2.5-7	. 3	
		2.3.1 Compatibility Consideration	. 3	
		2.3.2 Support for Simplified Upgrade Process for PowerHub Intelligent NIMs	. 3	
		2.3.3 Renamed Runtime Image File for FDDI and 6x1FE Module	. 4	
2.0	COL	TWADE ENLIANCEMENTS	1	
3.0		SOFTWARE ENHANCEMENTS		
	3.1	Year 2000 Compliance	. 4	
	3.2	A Get-General Request Generates a Sorted List	. 4	
	3.3	Multiple Instances of a MAC Address Allowed	. 5	
	3.4	Flushing of Route Tables	. 5	
	3.5	The PowerHub 7000 Responds to Broadcast Pings	. 5	
4.0	INST	ALLATION OF THE SOFTWARE	. 5	
	4.1	Displaying the Current Software Versions	. 5	
	4.2	Simplified Upgrade Process for Intelligent NIMs	. 7	
		4.2.1 FSI Booting Instructions for Upgrading Software Version 7-2.6.3.x to 7-2.6.4.2	. 8	
		4.2.2 FSI Booting Instructions for Downgrading the 7-2.6.4.2 Software	11	
5.0	CON	TACTING THE TECHNICAL ASSISTANCE CENTER	13	

TABLE OF CONTENTS

1.0 General Description of Software Release

These notes are for system administrators or others responsible for installing and using *PowerHub* 7000 system software version 7-2.6.4.2. These notes describe the new features in software versions 7-2.6.4.2, the DRAM and software requirements for this software version, and how to install it.

CAUTION



To use system software version 7-2.6.4.2, you must upgrade all the ATM, FDDI, and 6x1FE boot PROMs before attempting to boot the system.



System software 7-2.6.4.2 supports up to 96 segments. You can use up to 34 segments without the optional Packet Accelerator. If you plan to use more than 34 segments, your Packet Engine must have the Packet Accelerator. To support a maximum configuration of 96 segments, your *PowerHub* must have a Packet Accelerator (which accounts for 62 of the 96 segments) and 24 MB of memory. For information about segment numbering, see Section 1.4 in the *PowerHub 7000 Installation and Configuration Manual, V 2.6 (Rev C)*.

2.0 System Requirements

2.1 Memory Requirements

2.1.1 DRAM

If you bought your PowerHub with software version 7-2.6.4.1 installed, the Packet Engine is shipped with a standard 24 MB of DRAM SIMM memory and a 4 MB Flash Memory Module. Also, for *PowerHub* 7000s with an ATM uplink, the PowerCell 700 must be configured with 8 MB of memory on the ATM module itself. The 24 MB of DRAM is enough to use all the PowerHub protocols and the Bridge MIB.

If you are installing software version 7-2.6.4.2 on a Packet Engine that contains less than 24 MB of DRAM, you need to add additional DRAM.

The following PowerHub functions are supported with the mandatory 24 MB of Packet Engine DRAM:

- Bridging
- Bridge MIB
- ATM
- OSPF routing
- IP routing
- IPX routing
- IPM routing
- AppleTalk routing
- DECnet routing

To display the amount of DRAM on your Packet Engine, issue the **mgmt showcfg** command. The DRAM amount is also displayed.

If you need additional DRAM to meet your network needs, contact FORE Systems TAC for DRAM upgrade information.

2.1.2 ATM Memory Requirements

The *PowerHub* 7000 supports the PowerCell 700 ATM Module. In order to use the PowerCell ATM Module with system software version 7-2.6.4.2, the PowerCell module must have at least 8 MB of memory installed. However, some Revs of PowerCell Module shipped prior to the release of system software version 7-2.6.4.1 were configured with 4 MB.

You can check the Rev/Iss of your ATM Module by issuing the mgmt id prom command. The syntax for this command is as follows:

mgmt idprom <slot-number>

where:

<slot-number> Specifies the slot where the PowerCell 700 ATM Module is installed.

After you have determined the Rev/Iss of your PowerCell Module, compare the Rev/Iss to those in Table 1.

Table 1 - Revs/Issues of PowerCell 700 that need a memory upgrade.

Rev/Iss of PowerCell 700	Amount of Memory Installed
Rev 8, Iss 1 and below	4 MB
Rev A, Iss 1 to Rev D, Iss 2	4 MB
Rev E, Iss 1 and Rev E, Iss 2	4 MB
Rev F, Iss 1 to Rev G, Iss 1	4 MB

If your PowerCell Module is one of those listed in Table 1, the module needs to be upgraded to a Rev/Iss that contains 8 MB. Contact FORE Systems TAC for information regarding memory upgrade for your PowerCell ATM Module.

2.2 Firmware Requirements



To use system software version 7-2.6.4.2, you must upgrade all the PowerCell (ATM), FDDI, and 6x1FE boot PROMS before attempting to boot the system with version 7-2.6.4.2.

To use system software version 7-2.6.4.2, consult the table below for the required PROM versions:

PowerHub ModuleFirmwarePacket Engine2.5.5 or laterATM Engine7atmp-1.2FDDI Engine7fp-1.12Fast Ethernet7fep-1.2

Table 2 - Recommended Firmware

2.3 Compatibility with System Software 2.5-7

System software versions 2.6-7 and later are compatible with configuration files created under system software version 2.5-7. However, because the number of segments that can be configured has increased from 24 to 96, it may be necessary to update the segment numbers in some commands in the configuration file.

Although commands may need to be updated in the configuration files, there is no need to update the command that defines the default network (bridge) group. When the configuration file is saved after installing system software version 7-2.6.4.2, a new default network group is created to replace the older default group. The new default group contains all the segments in your *PowerHub* 7000. The new group is named default.

The older default group, if present, is not removed from the configuration file, but is renamed old_default. Note that if an attempt is made to create a default group that does not contain all the PowerHub segments, this group is saved as old_default, not as default.

For information about bridge groups, including the default bridge group, see Section 2.9.5 in the *PowerHub Software Manual*, *V 2.6* (Rev C).

2.3.1 Compatibility Consideration

The *PowerHub* 7000 cannot form FORE IP connections to FORE Systems model ASX-100 or ASX-200 ATM switches. The ASX-100 and ASX-200 support only AAL3/4, whereas FORE IP requires AAL 5. Connections can be formed through the switch, but not to the switch. FORE Systems model ASX-200BX and ASX-1000 do support AAL 5. FORE IP connections can, thus, be made to these switches.

2.3.2 Support for Simplified Upgrade Process for PowerHub Intelligent NIMs

Software version 7-2.6.4.2 contains support for a simplified upgrade procedure for the PowerCell ATM Module and the 6x1 Fast Ethernet NIMs. To use the new upgrade process, issue the diag bpu command to load new boot PROMs on the intelligent NIMs. After the boot PROMs are upgraded, the software upgrade process is transparent. This upgrade process has two steps:

- 1. Load all the image files for a software release (Packet Engine runtime and, if applicable, boot PROMs for the intelligent NIMs) onto the PowerHub's Flash Memory Module. To ensure there is room, a 4 MB Flash is recommended. If your system came with 7-2.6.4.1, it has a 4 MB Flash that contains all the files. However, if you are upgrading a PowerHub system that has already been installed, the files are located on the two disks (Disk 1 of 2 and Disk 2 of 2) that you received from FORE Systems.
- 2. Boot the Packet Engine runtime software. The Packet Engine runtime software in turn boots the PowerHub Intelligent NIMs.

The complete procedure is documented in Section 4.2 "Simplified Upgrade Process for Intelligent NIMs" in these notes.

2.3.3 Renamed Runtime Image File for FDDI and 6x1FE Module

The *PowerHub* 7000 can be configured with an assortment of NIMs (Network Interface Modules). The runtime image files of some of these modules have been renamed:

- For PowerHub 7000s configured with a 6x1 Fast Ethernet Module (6x1FE), the name of the 6x1FE runtime image file has been changed from 6x1fe to 7feth. Make sure the cfg and bootdef files contain the proper file name. If your software diskettes contain a Fast Ethernet runtime image file name other than 7feth (for example, 7fe), rename the file to 7feth before upgrading the software.
- For *PowerHub* 7000s configured with a FDDI module, the name of the FDDI runtime image file has been changed from 7f to 7fddi. Make sure the cfg and bootdef files contain the proper file name. If your software diskettes contain a FDDI runtime image file name other than 7fddi (for example, 7f), rename the file to 7fddi before upgrading the software.

3.0 Software Enhancements

The following software enhancements are present in version 7-2.6.4.2:

- Software version 7-2.6.4.2 is fully year 2000 compliant.
- The PowerHub responds to a get-general request with a sorted list.
- An additional user interface option to configure Nearest Server has been added to the IPX subsystem. The PowerHub responds with the configured server to the IPX request for server.
- Software version 7-2.6.4.2 allows multiple instances of a MAC address.
- Software version 7-2.6.4.2 has a new command to flush route tables.
- *PowerHub* 7000 can be configured to respond directly to broadcast pings of interfaces in same subnet without forwarding the broadcast to the subnets.

3.1 Year 2000 Compliance

FORE Systems has carefully analyzed all software and hardware products to ensure that no problems will occur when the year 2000 arrives. The year 2000 rollover has been simulated in our test laboratories to check for and correct any adverse behavior in all of our products. Our test plan is available for customer review.

3.2 A Get-General Request Generates a Sorted List

When the PowerHub gets a get-general request, it responds with a sorted list. NetWare 32 client has a mechanism that first sends a get-nearest request, but if this for some reason fails or is not the preferred tree, NetWare 32 client will send a get-general request. The PowerHub replies with a list that is sorted by hop count. Nearest-Server Configuration Option.

An additional user-interface option to configure Nearest Server has been added to the IPX subsystem. The PowerHub responds with the configured server to the IPX request for server.

3.3 Multiple Instances of a MAC Address Allowed

In software version 7-2.6.4.1 the PowerHub learned a MAC address on only one of its interfaces. If the same MAC address was relearned on a different interface, the previous instance of the MAC address was removed. In certain topologies, this resulted in the thrashing of MAC address between two interfaces. This problem impacted the PowerHub performance. In software version 7-2.6.4.2, the PowerHub can learn the same MAC address on more than one PowerHub interface. The restriction is that the interfaces on which the same MAC address is learned should belong to different bridge groups. For the interfaces in the same bridge group, the 7-2.6.4.1 functionality remains.

3.4 Flushing of Route Tables

This command can be used to clear the learned routing information from the routing table. The **ar** command doesn't clear/flush/delete the static routes configured on the PowerHub. To delete the static routes, use the **dr** command.

3.5 The PowerHub 7000 Responds to Broadcast Pings

In software version 7-2.6.4.1, the PowerHub responded to broadcast pings of interfaces in same subnet by forwarding the broadcast to the subnets. A software 7-2.6.4.2 enhancement allows the *PowerHub* 7000 to respond directly to broadcast pings of interfaces in the same subnet without forwarding the broadcast to the subnets.

4.0 Installation of the Software

CAUTION



To use system software version 7-2.6.4.2, you must upgrade all the PowerCell (ATM), FDDI, and 6x1FE boot PROMs before attempting to boot the system with version 7-2.6.4.2.

4.1 Displaying the Current Software Versions

To display the software versions running on the PowerHub system, issue the following command:

main version [<slot-number>|all]

where:

<slot-number>|all

Specifies either a specific NIM slot or all NIM slots in the chassis. If you do not specify a slot number, the command displays the software versions (system software and boot PROM) installed on the Packet Engine.

The example on the following page shows the type of information displayed by this command. In this example, the all argument is used to display version information for all the modules in the Power-Hub. (In this case, the Power-Hub is a 5-slot chassis.)

```
1:PowerHub:main# version all
Card Type: Packet Engine
      Serial #: 538027795
        Model: 7101-00
      Revision: G
        Issue: 1
PowerHub Version: 7-2.6.4.1 (s1.282) 1996.03.25 16:56
   PROM Version: 7pep-2.5.5 (s1.76) 1995.11.30 15:41
Card Type: PowerCell 700 (ATM)
      Serial #: 607027652
        Model: 7401-00
      Revision: C
        Issue: 1
Runtime Version: 7atm-2.6.4.1 (s1.39) 1996.04.15 2:30
   Prom Version: 7atmp-1.2 (s1.4) 1996.04.1 16:15
Card Type: UTP 13x1 Interface Module
      Serial #: 518020044
        Model: 7350-00
      Revision: C
         Issue: 1
Card Type: Intelligent NIM - Fast Ethernets
      Serial #: 931UT0002
        Model: 7360-00
      Revision: 1
        Issue: 1
Runtime Version: 7feth-2.6.4.1 (s1.25) 1996.03.25 16:57
   Prom Version: 7fep-1.2 (s1.1) 1995.10.10 16:15
Card Type: FDDI Dual DAS Interface Module - 33MHz
      Serial #: 9501AL0037ENG
        Model: 7302-00
      Revision: D
         Issue: 1
Runtime Version: 7fddi-2.6.4.1 (s1.79) 1996.03.25 15:590
   Prom Version: 7fp-1.12 (s1.7) 1994.11.14 15:17
```

This sample shows that the PowerHub contains the following software:

- System software version 7-2.6.4.1.
- Packet Engine boot PROM version 2.5.5.

- ATM runtime PROM version 7atm-2.6.4.1. (The prefix (7atm) in the version number indicates that the PROM is the ATM runtime software.)
- ATM boot PROM version 7atmp-1.2.
- Fast Ethernet runtime PROM version 7feth-2.6.4.1. (The prefix (7feth) in the version number indicates that the PROM is the Fast Ethernet runtime software.)
- Fast Ethernet boot PROM version 7fep-1.2.
- FDDI runtime PROM version 7fddi-2.6.4.1. (The prefix (7f) in the version number indicates that the PROM is the FDDI runtime software.)
- FDDI boot PROM version 7fp-1.12.

The numbers in parentheses following the software version names are used by FORE Systems TAC.

Notice that the date and time when the final versions of the software were officially released by the factory are listed to the right of the software versions.

If you need to upgrade the Packet Engine boot PROM, see the *PowerHub 7000 PROM Upgrade Instructions* in your PROM upgrade kit.

4.2 Simplified Upgrade Process for Intelligent NIMs

Software version 7-2.6.4.2 supports a new method of booting the PowerHub intelligent NIMs: FSI booting. FSI booting modifies the way the PowerHub 7000 boots the intelligent NIMs. FSI booting also facilitates the software upgrade process because this method of booting eliminates the need to issue the diagrpu command to load the runtime PROMs onto the intelligent NIMs.

WARNING!



If you issue the main version command with <slot> or all for the slot where the intelligent NIM is installed, the software shows the wrong version. Do not issue the diag rpu command at any time during the upgrade process. You do not need to manually upgrade the runtime PROMs on the intelligent NIMs.

FSI booting is transparent and provides the following enhancements:

- Stores the intelligent NIM runtime image files on the Flash Memory Module.
- This feature provides a central location for all the runtime image files. The files are no longer stored on the PROM chips on each intelligent NIM.
- Loads the intelligent NIM runtime software image files from the PowerHub's Flash Memory Module.
- To ensure that you have enough free space, a 4 MB Flash Memory module is recommended. If you bought your system with 7-2.6.4.1 or later, then you have a 4 MB Flash modules that contains all the files. However, if you are upgrading a PowerHub system that has already been installed, the files are located on the two disks (Disk 1 of 2 and Disk 2 of 2) that you received from FORE Systems.
- Boots the intelligent NIMs from the Packet Engine.
- The complete procedure is documented in the *PowerHub Intelligent NIM Boot PROM Upgrade Procedures*.
- If you decide to return to an earlier version of Packet Engine runtime software, the new boot PROMs are backwards compatible. If you boot using old runtime software (earlier than 7-2.6.4.1), the new boot PROMs you installed on the intelligent NIMs retrieve the old

intelligent NIM runtime software (earlier than 7-2.6.4.1) from the boot source. Therefore, you do not need to downgrade the boot PROM to return to an earlier version of Packet Engine runtime software.

4.2.1 FSI Booting Instructions for Upgrading Software Version 7-2.6.3.x to 7-2.6.4.2

FSI booting is available in system software version 7-2.6.4.2. This section outlines the one-time upgrade procedure for intelligent Modules required when upgrading from 7-2.6.3.x to 7-2.6.4.2.

CAUTION



Do not issue the diag rpu command at any point during this procedure.

After the boot PROMs are upgraded on the intelligent NIMs, the PowerHub Packet Engine automatically loads the runtime image files onto the intelligent NIMs. You do not need to upgrade the runtime PROMs.



The PowerHub software has been enhanced to provide an information dialog if you try to issue the **diag rpu**. This command is not required to upgrade the intelligent NIM runtime PROMs on the PowerHub system, and the dialog alerts you to that fact.

Also, the PowerHub software diskettes contain a readme file that includes a quick upgrade and quick downgrade procedure. The instructions in this file provide the same information as exists in the following sections. However, the quick upgrade and downgrade procedure enables you to perform your upgrades and downgrades more efficiently.

To upgrade the software from 7-2.6.3.x to software version 7-2.6.4.2:

- 1. Attach a management terminal to (or TELNET into) the TTY1 port on the Packet Engine, if you do not already have a management session open.
- 2. Verify that at least one of the green S (Status) LEDs on the Packet Engine and on each intelligent NIM is glowing steadily. A steadily glowing S LED indicates that the module has fully booted. If the Packet Engine or one of the intelligent NIMs does not have a steadily glowing S LED, press the reset switch (RST) to reboot the PowerHub.
 - If the Packet Engine or an intelligent NIM still does not have a steadily glowing S LED after you reboot, do not continue with this procedure. Contact FORE Systems TAC.
- 3. Save your PowerHub configuration to the configuration file.
 - a. If you want to save the PowerHub configuration to the floppy drive, issue the following command:

mgmt savecfg fd:<file-name>

where:

<file-name>

Specifies the name of the configuration file. To save the current configuration to the default (boot) configuration file, specify the file name cfg.



If your *PowerHub* 7000 has more than one boot source, we recommend that you save the configuration file on all of them. You can avoid potential problems by always ensuring that the configuration files on all boot sources match.

b. If you want to save the PowerHub configuration to the Flash Memory module, issue the following command:

mgmt savecfg fm:cfg

- 4. Insert the boot PROM upgrade diskette you received from FORE Systems into the floppy drive on the Packet Engine.
- 5. Issue the following command for each NIM:

diag bpu <slot> 7atm.prm

where:

<slot>

Specifies the NIM slot containing the PowerCell 700 on which you want to install the upgrade.

WARNING!



Make sure you do not accidentally load the wrong file onto an intelligent NIM. For example, do not load the 7atm.prm file onto a 6x1FE Module. If you do accidentally load the wrong file, the module will not function.

Make sure that your PowerHub system is configured to load the boot PROM files from the correct boot source. If there is a discrepancy in the boot source, the files will not load properly. For example, if your PowerHub system is configured to boot from the Flash Memory Module and the boot PROM files are on the boot PROM upgrade diskette, then the files will not load properly. If you need to load the boot PROM files from a different device, specify that device (fd: for floppy drive, or fm: for Flash Memory module) as part of the file name. For example:

diag bpu <slot> fd:7atm.prm

WARNING!



Do not issue the diag rpu command at anytime during this procedure.

Here is an example of the diag bpu command. In this example, the ATM boot PROM is upgraded on the PowerCell 700 located in slot 2.

2:PowerHub:main# diag bpu 2 7atm.prm sending file to slot 2...
writing file to EPROM 1 in slot 2...
Operation Complete

You must issue this command for every PowerCell ATM module in your PowerHub system. The upgrade process takes about one minute per PowerCell 700.

WARNING!



Do not attempt to reboot the PowerHub or interrupt power to the PowerHub during the PROM upgrade. If the PROM upgrade is interrupted, the PowerHub system might not be capable of rebooting. If you cannot reboot, then you will be unable to attempt the upgrade again. If the PowerHub is rebooted or the power fails while the **diag bpu** command is being processed, the PROM must be physically replaced with a new PROM.

If the power is accidentally interrupted during execution of the diag bpu command, or if this procedure is unsuccessful for any reason, do not continue with this procedure. Instead, contact FORE Systems TAC

6. Issue the following command for each 6x1FE Module in the chassis:

where:

<slot>

Specifies the NIM slot containing the 6x1FE Module on which you want to install the upgrade.

This command loads the new Fast Ethernet boot PROM onto the 6x1FE Module in the specified slot.

Here is an example of the diag bpu command. In this example, the Fast Ethernet boot PROM is upgraded on the 6x1FE located in slot 4.

```
2:PowerHub:main# diag bpu 4 7feth.prm
sending file to slot 4...
writing file to EPROM 1 in slot 4...
Operation Complete
```

7. Issue the following command for each FDDI Module in the chassis:

diag bpu <slot> 7fddi.prm

where:

<slot>

Specifies the NIM slot containing the FDDI Module on which you want to install the upgrade.

Here is an example of the diag bpu command. In this example, the ATM boot PROM is upgraded on the PowerCell 700 located in slot 2. The upgrade process takes about one minute per PowerCell 700

```
2:PowerHub:main# diag bpu 2 7fddi.prm
sending file to slot 2...
writing file to EPROM 1 in slot 2...
Operation Complete
```

8. Insert the floppy diskette Disk 1 of 2 into the floppy disk drive.

Not all the files will fit on one floppy. The bootdef, 7pe, intloop, extloop, and dispcfg image files are on Disk 1 of 2. The 7f, 7atm, and 7feth files are on Disk 2 of 2.

9. Copy the 7pe and appropriate intelligent NIM runtime image file(s) from the floppy diskettes to your boot source (for example, the Flash Memory Module). Flash memory is recommended especially if your system contains multiple intelligent NIMs. You can verify the primary boot source by issuing the following command:

nvram show bo m

- 10. Insert Disk 2 of 2 into the floppy disk drive.
- 11. Copy the remaining intelligent NIM boot PROM files—if applicable—from the floppy diskettes to your boot source (for example, the Flash Memory Module).
- 12. Reboot the PowerHub system (booting from flash).

Upon reboot, the Packet Engine automatically finds the boot file on the appropriate intelligent NIM boot PROM, and the corresponding runtime image file on the Packet Engine's Flash memory module. The Packet Engine then loads the runtime file through the Power-Hub backplane onto the corresponding intelligent NIM and boots the module. If your Power-Hub system, or its intelligent NIMs, does not boot, call FORE Systems TAC.



"Full" netbooting is not yet supported for the FSI boot process. If your PowerHub 7000 is set up to netboot, you must change the boot source from the TFTP server or ZMODEM port to the Flash Memory Module.

To change the boot source to the Flash Memory Module, issue the following command:

nvram set bo m

4.2.2 FSI Booting Instructions for Downgrading the 7-2.6.4.2 Software

Perform the following procedure to downgrade the Packet Engine and intelligent NIMs from software version 7-2.6.4.2 and later.



Make sure that when you downgrade the software, you are downgrading to the original version of software that you were running before you performed the upgrade

WARNING!



Do not issue the diagrpu command at any time during this procedure. Boot PROMs are backwards compatible. You do not need to explicitly downgrade the boot PROMs. Do not issue the diag bpu command.

- 1. Attach a management terminal to the TTY1 port of the Packet Engine if one is not already attached.
- 2. Issue the main version <slot> command for the slot containing the Packet Engine.

 The *PowerHub* 7000 should be configured with the latest version of Packet Engine boot PROM. This version was loaded when you upgraded to software version 7-2.6.4.2.
- 3. Verify that at least one of the green S (Status) LEDs on the Packet Engine and on each intelligent NIM is glowing steadily. If the Packet Engine or one of the intelligent NIMs does not have a steadily glowing S LED, press the reset switch (RST) to reboot the hub.
- 4. Verify that the boot order specifies the floppy disk by typing nvram show bo.

 If the boot order does not specify floppy drive (£), set the boot order to the floppy drive with the following command:

nvram set bo f

- 5. Save the current configuration to the cfg file on the appropriate device by using one of the following procedures:
- To save your configuration to a disk in the floppy drive, type:

mgmt savecfg fd:<file-name>

where:

<file-name>

Specifies the name of the configuration file. To save the current configuration to the default (boot) configuration file, specify the file name cfg.

• To save your configuration to the PowerHub Flash Memory Module, type:

mgmt savecfg fm:cfg



If your PowerHub system is configured with multiple boot sources, we recommend that you save your configuration on all of them.

6. Insert the diskette which contains the old Packet Engine software (Disk 1 of 2) into the floppy diskette.

WARNING!



Make sure that you are inserting the diskette that contains the version of software that you were running prior to the upgrade to 7-2.6.4.2. The intelligent NIM runtime software does not need to be downgraded. Do not issue the diagrpu command.

7. Reboot the PowerHub system.

Because you did not issue the diag rpu command to "burn" the new runtime software

onto the intelligent NIM PROM chips, the old runtime software has remained on the PROM chips, but was dormant while you were using system software version 7-2.6.4.2. When you reboot the PowerHub system after the downgrade, the old Packet Engine software retrieves the old intelligent NIM run-time software and the PowerHub operates with the system software that you were using before the upgrade.

If your PowerHub system or its intelligent NIMs does not boot, contact FORE Systems TAC.

5.0 Contacting the Technical Assistance Center

In the U.S.A., you can contact FORE Systems' Technical Assistance Center (TAC), using any of the following methods:

1. You can receive online support via TACtics Online at:

http://www.fore.com/tac

2. You can contact the Technical Assistance Center via e-mail at:

support@fore.com

3. You can telephone your questions to the Technical Assistance Center at:

4. You can FAX your questions to the Technical Assistance Center at:

+1 724-742-7900

Technical assistance for non-U.S.A. customers should be handled through your local distributor.

No matter which method is used for technical support, please be prepared to provide the serial number(s) of the product(s) and as much information as possible describing your problem or question.